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# Impact of Industrialization on the Social Ecology of the Hill Areas of Uttar Pradesh

(Sponsored and Financially Supported by the Industrial Development Bank of India)

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by

**B. K. Joshi**

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INSTITUTE OF DEVELOPMENT STUDIES, LUCKNOW

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## ACKNOWLEDGEMENTS

The present study on the impact of industrialization on the social ecology of the hill areas of Uttar Pradesh was carried out at the suggestion of the Industrial Development Bank of India. We are indeed very grateful to them for sponsoring the study and providing the necessary funding. We would also like to record our grateful thanks to the management and staff of the industrial units included in the study viz., Almora Magnesites Ltd., Almora, Teletronix Ltd., Bhimtal, U.P. Digitals Ltd., Bhowali, Saraswati Woollen Mills Ltd., Ranikhet, Venus Cements Ltd., Rani Pokhri and A P R Wools Ltd., Muni ki Reti. They extended their full cooperation and provided us all the information we needed. We also received full help and cooperation from the Joint Directors of Industries of Kumaun and Garhwal, especially in the identification of industrial units which have been included in our study. We would, therefore, like to record our thanks to them as well.

At the Giri Institute of Development Studies we were assisted by Shri C.N.Ray and Shri C.S. Adhikari, Research Fellows, who undertook much of the task of data collection, and by Shri P.J.Devassy Kutty and Shri S.Devanand who typed the report. To these colleagues as well we are extremely grateful.

GIDS, LUCKNOW  
JANUARY 1987.

B.K. JOSHI



## IMPACT OF INDUSTRIALIZATION ON THE SOCIAL ECOLOGY OF THE HILL AREAS OF UTTAR PRADESH

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### Background

This report presents the findings of a research study on the impact of industrialisation on the hill areas of Uttar Pradesh which consists of an area of 51,125 sq. kms. located along the Himalayas in the northern part of the State. The population of the area was 48.36 lakhs according to the 1981 Census. Administratively it is divided into 8 districts viz., Dehra Dun, Tehri Garhwal, Uttar Kashi, Garhwal, Chamoli, Naini Tal, Almora and Pithoragarh. The first five constitute the Garhwal Division and the last three the Kumaun Division.

The region represented by the hill areas of Uttar Pradesh has generally been recognised as economically backward with certain special problems emanating from its particular geographical features like terrain and topography. One of the most striking features of the hill region of Uttar Pradesh is the predominance of agriculture and



forestry in its economic structure. About 87 per cent of the economic product (from commodity producing sectors only) is accounted for by agriculture and forestry as against the state average of 77 per cent. In contrast the share of manufacturing in the economic product was only 11 per cent as against 22 per cent for the state.

Thus the hill region emerges as a backward region in terms of industrial development. This is clear from the fact that all the eight districts are included in Category 'A' of backward districts of Uttar Pradesh where the maximum central investment subsidy of 25 per cent is available. In addition four districts viz. Chamoli, Pauri Garhwal, Tehri Garhwal and Uttar Kashi (all in the Garhwal Division) also happen to be Zero Industry Districts. Being industrially backward, a number of special incentives are available for the establishment of industries in these districts. These include the Central Investment Subsidy of 25 per cent on fixed investment in land, building, machinery, etc. subject to a maximum of Rs.25 lakhs, interest free Sales Tax loan equal to the Sales Tax paid for 5 years subject to a maximum of Rs.50 lakhs or 75 per cent of the gross value of fixed assets available to units set up before September 1982; exemption from Octroi duty on machinery and building materials for 5 years from the grant of letter of intent or SSI registration to all new units,

generating set subsidy at the rate of Rs.500 per KVA to large and medium units and Rs.1000 per KVA to small scale units to the extent of 120 per cent of connected loan; and exemption from Sales Tax without any ceiling to all units set up after 1982 for 7 years in Pauri Garhwal, Tehri Garhwal, Uttar Kashi and Chamoli, 6 years in Almora and Pithoragarh and 5 years in Dehra Dun and Naini Tal. Further more, industries in all the eight Hill districts are also eligible for the Central Transport Subsidy of 75 per cent of the cost of transportation of raw materials and finished goods from the nearest rail-head.

It may be mentioned that this package of incentives is available to the hill region of Uttar Pradesh on the same basis as all other industrially backward areas in the country or the state as the case may be. The only extra incentive given to the industrially backward hill areas consists of the transport subsidy. The motive behind the grant of these incentives, obviously, is to give a spurt to the industrial development of these areas by attracting new industries which otherwise may shy away from these places. The implicit assumption underlying the approach of industrial growth through incentives is that industrialization is essential for the economic development of the backward hill areas. With this in view the Draft Seventh Five Year Plan of Uttar Pradesh has proposed an outlay of



Rs.80 crores on the industrial sector in the hill region of the state. Out of this Rs.40 crores is proposed for large and medium industries, Rs.34 crores for small scale and village industries and Rs.6 crores for geology and mining. During the Sixth Five Year Plan the outlay on industries in the hill region was 36.16 crores. Yet it must be borne in mind that the industrial sector accounted for only 6.3 per cent of the total outlay in the Sixth Plan for the hill region and 4.6 percent of the proposed outlay in the Seventh Plan. A larger part of the investments have gone to infrastructure like roads - 23 per cent in the Sixth Plan and 16 per cent in the Seventh, and power - 11 per cent in the Sixth Plan and 12 per cent in the Seventh - which also play a very important role in catalysing the process of industrial development.

The purpose of this study was to analyse the impact of industrialization in the hill areas of Uttar Pradesh. The impact has been analysed along two dimensions: economic and social-ecological. In the economic impact we have focussed on the backward and forward linkages of the industries, employment and income generation, while the social-ecological impact concerns itself with the changes in occupational pattern and attitudes, housing, development of infrastructure facilities like banking, communications, education, health, etc. and the cultural consequences of industrialization.

The study is based on primary investigation of six industrial units in the Kumaun and Garhwal regions of the State. In selecting the industrial units for study we tried to keep the following considerations in mind :

- i. an equal number of units should be selected from each of the two regions;
- ii. the units should be located in hills i.e. excluding the foot hills viz., the Doon valley and the Terai and Bhabar regions of Naini Tal and Pauri Garhwal districts;
- iii. there should be representation of the following kinds of industries : local raw material based, those enjoying a locational advantage in hills due to the temperate climate and dust-free atmosphere (e.g. electronics and precision instruments), polluting and non-polluting industries, and public, private and joint-sector industries; and
- iv. the units should be of medium and large size in terms of investments.

In fact we found it difficult to strictly adhere to the above criteria in the selection of the units. The first two criteria in particular presented the greatest difficulties, especially in the Garhwal Division. For one

we did not find any industrial unit worth the name in the hills of Garhwal. All the industrial units of Garhwal are located either in the Dun valley or in the foot hills of Pauri Garhwal district. As a result we had to select two from among these. The remaining four are from the Kumaun Division and are located in the hills. Five of the six units are medium sized industries, while one (Teletronix) is a small scale industry. We included this in our study because it brings into sharp focus both the problems and opportunities of the electronic industry in the hill areas. It has had a chequered history but appears now to be well set to become a trend-setter in the field of electronics in the region. The six units selected for study by us were (i) Almora Magnesites Ltd, Matela, District Almora, (ii) Saraswati Woollen Mills Ltd., Ranikhet, District Almora, (iii) U.P. Digitals Ltd., Ghorakhal, District Naini Tal, (iv) Teletronix Ltd., Bhimtal, District Naini Tal, (v) Venus Cements Ltd., Rani Pokhri, District Dehra Dun, and (vi) APR Wools Private Limited, Muni ki Reti, District Tehri Garhwal. The main characteristics of the units have been summarised in the table below.

Name of Unit	Location <sup>1</sup>	Products	Raw Materials <sup>2</sup>	Ownership <sup>3</sup>
Almora Magnesites Ltd.	H	Dead Burnt Magnesite	L	JS
Saraswati Woollen Mills	H	Shoddy Wool Yarn	O	PR
U.P. Digital Ltd.	H	Watch Assembly, Watch Cases	O	PU
Teletronix Ltd.	H	T.V. Sets, Electronics	O	JS
APR Wools Ltd.	F	Woollen and Acrylic yarn	O	PR
Venus Cements Ltd.	F	Portland Cement	L	PR

Note : 1. H - Hills, F - Foothills  
 2. L - Local, O - Outside  
 3. JS - Joint Sector, PR - Private Sector  
 PU - Public Sector

It will be seen that these six units encompass a wide variety in terms of items manufactured, raw materials used and ownership pattern. They manufacture a variety of products like dead burn magnesite, shoddy wool yarn, watches and watch cases, T.V. sets and other electronic items. Woollen and acrylic yarn and Portland cement. Two units are based on local raw materials while four get their raw materials from outside. Incidentally both the units using local raw materials are mining-based industries. In terms of ownership pattern we have one unit in the public sector, three in the private sector and one in the joint sector.

We present below a brief description of each of the six units studied by us before going on to analyse the general impact of industrialization in the hill areas. We have decided to present a case-by-case description rather than a comparative one because each unit has certain peculiar features and therefore special problems on account of either location, or nature of activity or ownership pattern or past history. Some features and problems may even be common to a number of units which we will highlight later while taking up the general impact of industrialization.

#### A. Almora Magnesite Limited

Almora Magnesites Limited is a joint sector enterprise incorporated in 1971 with the participation of the U.P. State Industrial Development Corporation (UPSIDC) the Steel Authority of India Limited (SAIL) and the Tata-owned Belpahar Refractories (now renamed the Tata Refractories). The authorised share capital of the company is Rs.2 crores while at present Rs.1.4 crores has been paid up and is owned in the following ratio : UPSIDC - 41%, Tata Refractories - 39% and SAIL - 20%. The Chairman of the company is a nominee of the U.P. Government (which through the UPSIDC is the largest shareholder), while the Managing Director is appointed by Tata Refractories. At present the Commissioner, Kumaun Division is the Chairman of the Company. The Head Office of the Company is at Almora, while the Registered Office is at Matela in Almora District where the factory is also located.



Though the company came into existence in 1972, actual production started in May 1974 when it was transferred a mining lease of over 866 acres of land by the UPSIDC. The UPSIDC had been given the lease in 1963 by the U.P. Government for a period of twenty years. Thus the existing mining lease of the company expired in 1983. Though it has asked for its renewal, this has not yet been obtained owing to some formalities regarding clearance under the Forest Protection Act and other environmental protection measures which have yet to be obtained. However, it has been granted temporary permission to mine since 1983 which has enabled it to continue its operations.

The company has availed of a term loan from the Industrial Development Bank of India to the tune of Rs.97 lakhs. Out of this about Rs.50 lakhs had been paid back till the end of March 1986. For the past few years the company has been sustaining losses. The main reason for the losses was the fall in the demand for refractory bricks mainly because of recession in the steel industry (resulting in a fall in the demand for magnesite). However recently there has been an improvement in demand and the company hopes to turn the corner and post a profit in the current year. It is also planning to instal an ore beneficiation plant at its works at a total cost of Rs.50-60 crores, hoping thereby to improve the quality of the final product and fetch a better price. The price of deadburnt magnesite at present varies between Rs.2000 to Rs.3000 per tonne depending on its quality.



The company is engaged in mining of magnesite ore in and around Jhiroli village in the Bageshwar tehsil of Almora district. The mining is done in open-cast mines. The ore is converted into dead-burnt magnesite in two vertical shaft kilns located at Matela (which is also the registered office of the company) about 10 kms. from the mines. The dead-burnt magnesite is graded and packed for sale to various users mainly manufacturers of refractory bricks and the steel industry. The two kilns of the company have a capacity of producing about 65 tonnes of dead-burnt magnesite per day. It is a continuous process with magnesite ore being loaded from the top and the dead burnt magnesite being obtained at the bottom. The plant has been operating at about 90 to 95 per cent of capacity with an annual production of about 20,000 tonnes.

It may be mentioned here that magnesite is an extremely important material for the production of refractory bricks. The Central Himalayas (especially the Jhiroli mines and parts of Pithoragarh district) contain some of the most important deposits of the mineral. The only other source is Salem in Tamil Nadu, where the deposits have been almost exhausted. Consequently the Central Himalayas have now become the most important source of magnesite. The proven and inferred reserves of magnesite ore at Jhiroli are presently estimated at about 5 million tonnes. At the present rates of extraction, these are expected to

last for about one hundred years. In addition there are larger reserves in Pithoragarh district. If these areas are not mined for magnesite then the only alternative available to the country is to import this important mineral. It is important to keep this fact in mind because in recent years there has been considerable opposition to mining operations in the Himalayas in general, and to magnesite mining in Almora and Pithoragarh districts in particular, because of its supposedly adverse impact on the environment of this sensitive region.

The mining operations are mechanised using pneumatic drills, and mechanised shovels, etc. The ore is transported to the factory site by means of dumper trucks. The main inputs required by the mines and the factory are diesel for mining machinery and dumper trucks and furnace oil for the kilns. The use of electricity is restricted to running induced draft fans in the kilns.

The kilns consume about 12 kilolitre of furnace oil every day. The furnace oil is brought from Mathura to Kathgodam (the rail head) where it is stored in two tanks with a capacity of 350 kilolitre. From Kathgodam the furnace oil is transported to the factory site by tanker trucks. While the company has given a transport contract to an Almora-based transport operator

for this purpose, it has also maintained two tanker-trucks of its own to take care of emergency requirements. Furnace oil is the most expensive input used by the company costing about Rs.10 lakhs per month (at the rate of Rs.2800 per kilolitre). The company consumes about 30 kilolitres of diesel per month, mainly in mining operations and transport.

The supply of electricity to the factory, offices and housing colony has been provided through a 450 KVA sub-station of the U.P. State Electricity Board which is very close to the factory site. The sub-station is serviced by a 33 KV transmission line linking Almora to Bageshwar. The supply of power was reported to be reliable and uninterrupted. Although a stand-by diesel generator is also maintained by the company, it is seldom used. The average expenses on electricity come to about Rs.1.5 lakhs per month.

Water is supplied by the Uttar Pradesh Jal Nigam and there are problems of its availability. The company needs about 100 kilolitres per day mainly for drinking purposes. Very little water is used in the mining or manufacturing process.

Almora Magnesites has provided regular, full-time employment in the mines and factory to about 600 people from the nearby villages. The total employment in the company is 756, which includes 606 wage workers - skilled

semi-skilled and unskilled - 70 ministerial employees and 80 people in the managerial and supervisory categories. Almost all the employees in the first category belong to the nearby villages. Thus there does not appear to be any problem of outside workers being employed to the exclusion of the locals which characterises some of the new industrial projects in backward areas, often leading to needless social tensions.

The workers, on the whole, seem to be well-paid and looked after. The average wage of the workers is Rs.1200 per month with the lowest wage being about Rs.800 per month and the highest about Rs.2400 per month. The monthly wage bill of the company comes to about Rs.11 lakhs, most of which is disbursed in the area of the mines and the factory. With so much money available regularly in a small area, we were surprised to find that it has had virtually no economic impact. There are only a few shops doing moderate business located at Kafligair, situated close to the factory on the Almora-Bageshwar motor road. Though there is a branch of the State Bank of India at Kafligair, it did not report any major savings by the local households. On persistent enquiry, it came to light that a major part of the earnings are spent by the workers on alcohol. In fact alcoholism has become one of the major social evils in the hill areas of Uttar Pradesh. But it would be wrong to conclude that industrial



activity has led to the problem of alcoholism, because even in areas untouched by any kind of industrial activity, the problem exists in the same form. The only difference between the area of the magnesite mines and other areas, probably, is that in the former the people have more money available to spend on alcohol.

The company has also initiated a number of welfare measures for its workers. It has provided housing to about one hundred employees including the workers. However, most of the workers being local, live in their villages which are situated within walking distance of either the mines or the factory. It provides shoes and clothing to all workers. It also maintains a small hospital at Matela for the medical needs of its employees. In case of serious illness and accidents etc., the patients are taken by company transport to the District Hospital at Almora. The company also maintains a school for the children of its employees. Initially it was running the school on its own, but since last year it has been subsidising an organisation which runs a few schools at Kathgodam and Haldwani to run their school as well. In 1986 it had about 200 children on the rolls. The school buildings and other infrastructure are provided by the company. Another welfare measure undertaken by the company is the screening of films for the workers and other people of the nearby

areas once a week. The factory also has a subsidised canteen for the employees. Finally, it also runs a cooperative store which supplies most of the consumption items of daily need to the employees.

The worker-management relations are on the whole good. The workers are unionised being members of the Almora Magnesite Limited Workers Union which is by and large an independent union as it does not have a clear affiliation to any major trade union organisation. Since there is only one union, the question of inter-union rivalries does not arise. The union normally enters into 3 year wage contracts with the management. There have been no major strikes in either the mines or the factory, although work-stoppages, tool-down strikes lasting for 2 or 3 days have taken place. The last such strike took place in December 1985 and lasted for two-and-a-half days. Since the process of manufacturing dead-burnt magnesite in the kilns is a continuous one, work stoppages and strikes do create a lot of problems. The cooling down of the kiln has to be avoided because it takes a long time to bring it back to the required temperature. As a result the kilns have to be kept burning at reduced temperature even when they are not being operated.

While on the subject of labour-management relations, we would like to bring out an important aspect of the



social ecology of industrialization in this region. One of the complaints voiced by the management was that there was a high level of absenteeism - upto 50 per cent at times. This can create special problems in the factory because of the continuous nature of the process. It was pointed out that on many occasions the kilns have to be kept on reduced heat and production stopped because enough workers did not turn up for work. Since the problem has been persistent, the management claims that it has hired about 25 per cent more workers than are really needed.

The main reasons for the high level of absenteeism were found to be two-alcoholism and social customs. The problem of alcoholism has already been discussed. It needs to be borne in mind that most of the workers live in their villages and therefore continue to actively involved in the customs and mores of their social group. Thus whenever there is any social or religious ceremony in a village like festivals, births, marriages, deaths, etc. all the workers from that village, and sometimes from neighbouring villages as well, are absent from duty. This is a reflection of the strong community and group solidarity traditionally prevailing in the rural society of the hill areas. As long as the society was predominantly agrarian, it did not pose any major "economic" problems, because the work in the fields could be

rearranged or re-scheduled without causing any economic disruption. However, the work-style of an industrial organisation or society has little place to accommodate such community solidarity and the consequent rescheduling of work. That is why the managerial staff of the company see absenteeism as an evidence of the lack of an industrial culture in the area. While the management views absenteeism with concern because of its impact on production and ultimately on profits, the workers don't seem to share this perspective as they feel the same work can always be done later. Even the loss of wages for the days they are absent does not appear to be much of a disincentive for the workers. The probable reason is that while the wage earnings of the workers are much higher than that provided by their traditional occupation viz., subsistence farming, nevertheless the loss of a few days wages does not cause too great an alarm because of the security provided by the fact that other members of their family, especially the women, continue to farm the land.

The problem of absenteeism seems to be most acute in the case of Almora Magnesites alone. It was not reported in the other industrial units studies by us. One probable reason could be that the Matela - Jhirioli area where the factory and mines are located is the most remote location in our sample. Consequently the impact of urbanisation is also least here. The areas where the

other units are located are much closer to urban areas. This most probably also affects their attitude to work and employment as well. Furthermore, unlike in Matela-Jhirioli, most of the workers in the other units do not live in their own villages but in nearby urban areas. Therefore, the obligation to follow social customs and traditions is also not so binding there.

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The most important problem that is being faced by Almora Magnesites ever since it started work has been that of acquiring land and rehabilitating the displaced families. The company needs considerable areas of land for its mining operations, factory and office buildings, housing colony and other facilities like school, hospital, etc. The land acquired falls under seven villages viz., Jhirioli, Sinduri, Karasibunga, Baskhola, Sakar Paithan, Billori and Matela, which are situated close to each other. Of these Jhirioli village is situated on a ridge right above the present mining site. Thus if mining is continued here, the people of this village will have to be shifted as they are likely to lose their lands and houses to the mines. There are 88 households, mostly harijans, in Jhirioli who have to be rehabilitated. Land belonging to another 68 households in Matela, 14 in Billori and 4 in Baskhola has been almost fully acquired for building the factory, administrative offices and housing colony etc. In this way, 174 households have been identified for rehabilitation by the company.

The details of the land acquired by the company so far are as follows :

(area in acres)

Village	Area acquired through official channels	Land purchased privately	Land proposed to be acquired	Total
Jhircoli	69.79	31.78	0.62	102.19
Sinduri	19.70	--	11.79	31.49
Karasibunga	7.02	--	1.35	3.37
Baskhole	21.00	0.09	--	21.09
Sakar Paithan	1.64	0.09	--	1.71
Billori	0.78	0.43	11.72	12.93
Matela	1.53	--	1.16	2.69
Total	121.44	32.39	26.64	180.47

It will thus be seen that Almora Magnesites has so far acquired or purchased about 154 acres of land in seven villages located in the factory and mining areas. Another 27 acres is proposed to be acquired. With this the total land under the control of the company will come to about 180 acres. Out of the 154 acres acquired or purchased so far about 102 acres (or two-thirds) is from just one village viz. Jhircoli. This is so mainly because Jhircoli is located on the mining site.

Compensation has been paid by the company for the land acquired by it at rates determined by the government.



Thus out of the 121.44 acres acquired compensation amounting to Rs.7.67 lakhs in respect of 68.25 acres of land has been paid. For the remaining 53.19 acres (all of which incidentally is located in Jhiroli village) the company has deposited Rs.14.50 lakhs towards compensation with the government. Its disbursement has not been finalised as yet. The rate of compensation thus works out to about Rs.11,234 per acre for land acquired earlier and the compensation for which has already been disbursed to the people, and Rs.27,260 per acre for the land acquired later, the compensation for which, though paid by the company, is still to be disbursed to the people. The rates of compensation paid cannot be considered low by any standard. In fact if we compare the compensation with the price paid by the company for the land purchased by it, we find that the rates of compensation are higher. Thus 31.78 acres of land was purchased in Jhiroli at a cost of Rs.318,828, at an average price of about Rs.10,032 per acre.

Apart from land, the company has also purchased 52 houses - 45 in Jhiroli, 4 in Baskhola and 3 in Billori. The total price paid for 32.39 acres of land and 52 houses amounts to Rs.12.52 lakhs. It now proposes to acquire another 60 houses in Jhiroli village for they would have to be demolished in mining operations. The compensation for 52 of these houses has been assessed by the Public Works Department at Rs.10.62 lakhs.

Two things stand out from this review of land acquisition by the company. Firstly, the requirements of land are considerable, primarily because of mining. Since large areas have been acquired by the company, this implies that many people, especially in Jhiroli village, would lose all their land and houses. As such the problem of rehabilitating these people would be an important issue. Rehabilitation becomes particularly important when we bear in mind that most of the rural households in the area affected by the mining operations of the company are subsistence cultivators who own small and marginal holdings. As such they do not have the wherewithal or capacity to rebuild a new life for themselves elsewhere even with the compensation they receive for the loss of their lands. This is especially so in Jhiroli village which is a predominantly Harijan settlement. Thus they would have to be actively assisted in rehabilitating themselves.

Secondly, we find that the company has been quite fair in the payment of compensation to people whose lands and houses have been acquired by it. The rate of compensation paid compares very favourably with the market price of land in the area. Thus it cannot be claimed that people have been exploited or arbitrarily deprived of their lands as a result of magnesite mining.



Nevertheless the question of rehabilitating the households who have lost, or are likely to lose, their land and houses due to the operations of the company has been posing problems from the very beginning. A number of measures have been taken in this direction, but the problem seems to persist and continues to sour the relations between the company and the local people. In fact, an added complication is the politicisation of the issue in recent years owing to the fact that Jhiroli, the worst affected village, is a predominantly Harijan village and the State Assembly constituency in which it is located happens to be a reserved constituency. We will briefly review the major rehabilitation efforts undertaken so far and some of the important problems that have cropped up.

Almora Magnesites Limited has identified 174 households in four villages who need to be rehabilitated as they have lost all their land and/or house. The village-wise breakdown of these families is : Jhiroli - the entire village of 88 households, Matela - 68 households, Billori - 14 households and Baskhola - 4 households. Apart from paying compensation to these people for their land and houses, it was decided at the outset that they would be rehabilitated in the Terai region of Naini Tal district, because sufficient land was not available anywhere in the hills. Accordingly 484 acres of land was made available by the U.P. Government in Sitarganj.

Accordingly it was decided that each rehabilitated household would be given one acre of land free while 10 acres would be kept aside for community purposes. The allotment of land was to be contingent on handing over possession to the company of the land acquired by it. By June 1986, 177 households had taken possession of land at Siterganj. The village-wise break-up is as follows : Jhirioli - 35, Matela - 65, Billori - 13 and Baskhola - 4. Households still to be given land number 57 of which 53 are in Jhirioli alone. Thus it is quite clear that the people of Jhirioli, who incidentally are also the worst affected because the entire village would have to be abandoned if mining is to take place at all in the area, are the most reluctant to move to the Terai.

There could be a number of reasons for this reluctance of the people to take advantage of the rehabilitation programme. Firstly, people who have lived and farmed their land for generations in the hills may have a natural reluctance to start life anew in a totally different environment like the Terai, which, in spite of the dramatic agricultural progress witnessed in the area during the past three decades, has been traditionally viewed by the hill people as an alien and hostile land. This perception of the Terai may be particularly pronounced in Jhirioli because of its being a scheduled caste populated village on the one hand and relatively distant

from the Terāi on the other. While the upper castes in the hills have been quite mobile and are aware of the opportunities available in other areas like the Terai and the plains, the scheduled castes feel more vulnerable on this count. Apart from this, the people of Jhiroli also have less contact with the Terai than the hill people living closer to the area. This may act as a further deterrent to the rehabilitation efforts that have been taken up. Another inhibiting factor could be the experience of some of the previous small holders from the hills who moved to the Terai in the fifties and the sixties. Many of them could not cope up with the demands of agriculture in a new environment and the vigorous pressures from the settlers from other parts of the country especially Punjab. Many of them were dispossed of their land.

Thus there does appear to be a strong disinclination on the part of the people of Jhiroli to move to the Terai. This is evidenced from the fact that many households who had taken possession of land in Sitarganj either continue to live in their original villages or have even returned after giving their lands to others on sharecropping basis. They have come back to cultivate lands they do not own legally. Behind this move there could also be a desire to get some extra compensation from Almora Magnesites. In fact we found a few new houses being constructed at Jhiroli even while the hillside was being mined, though it

was apparent that these houses could not remain standing for long. The only explanation for this could be that these people want to pressurise Almora Magnesites to pay compensation for these houses as well.

Sensing the reluctance of the people of Jhiroli to move out of the hills and be rehabilitated in the Terai, the company has in recent years been making efforts to acquire some land nearby. Its efforts have recently borne fruit when the U.P. government passed orders for the transfer of about 20.4 acres of land in nearby Dewaldhar Estate to the U.P. State Industrial Development Corporation for the rehabilitation of the affected families in Jhiroli. The Dewaldhar Estate had come under the control of the State Government as a result of the land ceiling laws. It was possible to use the Dewaldhar Estate land for rehabilitation of the people of Jhiroli because all of them are small holders belonging to scheduled castes and therefore eligible for distribution of ceiling surplus land. It now remains to be seen whether this will finally help to solve the problem of rehabilitating the people of Jhiroli - an issue that has defied solution for so many years.

We have discussed at some length the problem of rehabilitation at Jhiroli, because we feel it is an important issue which is likely to crop-up whenever any major project requiring large areas of land is set up



in the hill areas. This would be particularly true of mining projects where obviously, the need for land is high. In the other industrial units studied by us the problem has not arisen primarily because their requirement of land are not as extensive.

Another major problem which Almora Magnesites has faced, and which is also likely to be faced by other mining establishments, is that of environmental impact and damage in general and damage to agriculture - especially standing crops, and private property in particular. Even since it started operations the company has had to contend with considerable criticism and even hostility on this score. The popular view in the region about the mining operations in Jhironli, which is also shared by many environmentalists in other parts of the country, is that a vast area has been laid waste threatening on the one hand, the livelihood of a large number of small farmers in the area whose crops are destroyed by debris and dust from the mines and factory, and on the other the ecological stability of the Himalayas in the area. To a large extent these fears have been fuelled by the experience of indiscriminate and predatory limestone mining in the Dehra Dun - Mussourie region which has now been severely limited through the intervention of the Supreme Court. The upshot of the environmental concern is to question the very need for mining in the Himalayas. Unfortunately, in all debate



and concern for environmental stability, the efforts of Almora Magnesites Ltd. to take environmental rehabilitation and pollution control measures have not received adequate attention. We detail below some of these measures in order to place the whole problem in the proper perspective.

The environmental problems arising out of the activities of Almora Magnesites Ltd. can be classified under three categories viz., pollution, land degradation and damage to private property. The pollution caused by the company is primarily air pollution and takes the form of emissions of carbon dioxide and fine particles of dust from the kilns. A few years back dust pollution was a major problem in the area and some land in the nearby areas was degraded due to the heavy fall-out of dust from the kilns. Recently, however, the company has taken measures to control dust emission by installing cyclonic dust collectors in the kilns. These have been functioning quite effectively and no dust is visible in the area even though both the kilns are in operation. The atmosphere around the factory does not appear any different from that in other nearby areas, except for a little bit of smoke from the chimneys which, however, does not collect but dissipates fairly quickly. The carbon dioxide emission also does not seem to effect vegetation - forests and farms - in the vicinity. In

fact at the time of our visit-in mid-May 1986- the people were harvesting their wheat crop and enquiries revealed that they were quite satisfied with the harvest.

As pointed out earlier, some land close to the factory was laid waste in the past because of heavy fall-out of dust from the kilns. The land still bears a ravaged look with a thick layer of hardened soil. Recently the company has tried to reclaim this land by planting trees, but it will be some time before the results can be properly assessed.

The second environmental problem pertains to the areas degraded as a result of mining. This problem is inherent to the very process of mining itself because if minerals are to be exploited then the land is bound to be degraded and wasted. In recent years the problem has been causing a great deal of concern all over the world and ways are being evolved to reclaim degraded mining areas, especially where open-cast mining is practiced. The methods being employed include saving the top-soil and overburden, refilling the mined-out areas with these and planting trees in order to restore the biological productivity of the mined areas. In certain cases remarkable successes have been achieved.

In the Jhironli mines of Almora Magnesites the problem of land degradation has two facets. One pertains to the areas being mined, and the other to the areas

below the mines which are affected by the debris rolling down the hill. The company has initiated measures to deal with both kinds of problems at considerable expense and with fairly good results. To protect the land below the mines from being damaged and destroyed, it has undertaken the construction of properly designed dumping yards and retaining walls. The sides and walls of these structures, especially where the soil is loose, are being planted with agaves and other bushes which act as soil binders and stabilizers. Other erosion control measures include construction of check dams, sluice dams and garland drains. In the mined out areas plantation work has been taken up. About 40,000 trees were planted in 1984 and another 20,000 in 1985. Though only 30 per cent of the plants have survived, yet looking at the condition of the land and the soil and the fact that the plantation area is very close to the existing mining site, this cannot be considered unusual by any means. The company is spending about Rs.2.5 lakhs per year on capital account alone on environmental protection measures. It has engaged a staff of about 20 consisting of civil engineers and other workers exclusively for this work. Whereever necessary, expert advice is sought from the forest and soil conservation departments of the State Government. Thus it should be clear that the company is not only alive to the environmental dimensions of its activities



but is also taking effective steps towards environmental protection and rehabilitation. The results of these efforts are visible even in a casual observation. The mining site and the areas around it do not present a picture of major ~~destruction~~ and ravage as is sometimes made out. In fact we found that the damage caused to the hill side is similar to that caused by road building activity in the hills.

The third category of environmental problem found by Almora Magnesites relates to the damage caused to private property, especially crop lands and houses, as a result of its operations. Most of the farms and houses lie about a thousand feet below the mines. They sometimes suffer damage due to rolling debris and rocks flying out whenever blasting is carried out. Though the problem of rolling debris has been largely controlled through the measures outlined above, the other problem continues. In such cases the company pays compensation to the affected people, i.e. those whose crops or houses may have been damaged, at rates determined by the revenue authorities.

The environmental problems faced by Almora Magnesites Ltd. raise some important questions which need to be considered in the context of industrialisation and development of hill areas. The first issue pertains to the desirability of mining in the Himalayan region.

Mining by its very nature does cause significant environmental damage wherever it is undertaken. The Himalayas happen to contain some important deposits like limestone, magnesite, rock phosphate etc. Many more may be discovered as further exploration takes place. The point to be considered is whether these deposits should be commercially exploited at all or not. According to some people mining activity should be totally prohibited in the Himalayas irrespective of the value of mineral resources because the Himalaya is an environmentally sensitive region. If this logic is accepted then the problem of environmental damage will of course not arise. By the same logic, however, road construction should also be stopped because that too involves blasting of the hillsides on a similar scale. Obviously, it may not be possible to do this as the communication network in the Himalayan region is still quite inadequate and more roads would have to be constructed, especially in the remote areas which are still quite isolated. Alternatively, one could recommend that mining should be taken up where feasible, but with proper environmental safeguards. Almora Magnesites is proceeding on this basis. Its experience in this regard should be carefully studied and proper lessons for environmental management and protection in other mining areas learnt from it. At the same time there may also be areas in the Himalayan region which are environmentally so sensitive and fragile



that no mining, and perhaps even road construction, could be recommended for them. Such areas should be scientifically identified and mapped and mining totally prohibited in them.

We would like to reiterate here that a clear policy in regard to mining in the Himalayas is urgently needed for otherwise existing and future mining units may continue to face hostile criticism from environmental groups. The policy should specify the areas where mining is permitted, the minerals which may be mined and the environmental protection and rehabilitation measures which would be mandatory. Very strong sanctions should be attached to violation of environmental protection measures. Periodic monitoring of environmental impact should be undertaken and the policy suitably amended from time to time.

Among the other problems faced by the company two deserve special mention as they are related to its location in the economically backward hill region. One is the shortage of skilled manpower and the other the inadequacy and unreliability of infrastructure facilities like transport and communications. The problem of hiring skilled workers is most acute as almost all the workers employed are from the nearby villages. There are no training facilities or other opportunities of acquiring necessary skills available to these people.

Such of the young people who do acquire some skill tend to migrate out of the hills as employment opportunities are very few in this region. Thus skills and training are imparted to the workforce on the job, which does tend to have some impact on efficiency and productivity. The company has tried to get round this problem to some extent by employing ex-servicemen who may have the necessary skills. Many ex-servicemen are working as dumper operators and security personnel in the mines and factory.

Non-availability of skilled man-power is a problem which is likely to be faced by all new industrial units set up in the region. Hence steps must be taken to overcome it. Otherwise we may be faced with the problem of hiring skilled workers from outside the region leading to dissatisfaction among the local youth. Some of the measures which can be taken in this respect include assessment of man-power needs given the pattern of industrial investment that is being currently made, and gearing the technical training institutions to meet the demand for trained personnel in the short and medium terms, and promoting a system of apprenticeship in existing industrial units to develop and upgrade the skills of the local youth. Alnora Magnesites does not have any programme of apprenticeship or training.

Infrastructure facilities, especially roads and communication, also create a number of problems for Almore Magnesites. Roads being the main arteries of transport in the hill areas, any blockage is bound to create problems. Unfortunately this happens all too frequently in the hills, especially during the rainy season when landslides and road blockages are a constant hazard. This affects movement of finished goods to the rail-head on the one hand and transport of inputs like furnace oil and diesel to the factory on the other. To overcome this latter problem the company maintains a minimum of ten days requirements of furnace oil at the factory. As a result considerable capital is blocked. For spare parts and other supplies it maintains a stock of 3-4 months requirements since all of them have to be brought from the plains and the supply is uncertain.

Communication facilities are highly inadequate. While the factory does have a telephone line for communication with its headquarters at Almore and with the rest of the world, it is very unreliable. Since this is a problem afflicting all industries in the hills, efforts should be made to improve the communication system, as otherwise the industrial development of the region may be seriously hampered.



B. Teletronix Limited, Bhimtal

The second industrial unit selected by us for study is the Teletronix Limited situated at Bhimtal in Naini Tal district. Though technically a small scale enterprise, it presents an interesting case. Its chequered history throws considerable light on the problems and prospects of industries in general and electronic industries in particular in the hill areas. The hill areas, it may be mentioned, have been considered particularly suited for the electronics industry.

The company came into existence in 1973 as a Joint Sector unit for the manufacture of television sets. It was promoted by a private entrepreneur trained at the Birla Institute of Technology, Ranchi, who was supported by the Birla Group through their Small Industries Research and Development Organisation (SIRDO) and the Kumaun Mandal Vikas Nigam (KMVN) - a U.P. Government undertaking set up for the development of the hill region of Kumaun. Shares of Teletronix were also offered to the general public and some people did invest. The precursor of the KMVN i.e., the Parvatiya Vikas Nigam had received a licence to manufacture TV sets in 1971.

The company started production in 1975-76 but faced a number of problems in manufacturing and selling its TV sets. By 1978-79 it had been able to sell only 127 TV sets.



By this time the company had accumulated losses totalling about Rs.14 lakhs and the future prospects seemed bleak. As a result the private entrepreneur who had taken the initiative in setting up the factory decided to withdraw and sold off his shares to the KMVN, which now came to control 75 per cent of the equity, the balance being held by private individuals. In this way the Teletronix factory has become virtually a unit of the Kumaun Mandal Vikas Nigam, which itself is a state government undertaking. A few individuals - about a dozen - also hold shares in it today. In order to rehabilitate the unit an agreement was entered into with UPTRON, another state government corporation engaged in the manufacture and marketing of electronic products, especially TV sets, in 1978. The agreement involved transfer of technical know-how for manufacture and marketing of TV sets and was initially in force for one year. The agreement was renewed in 1979 for a longer period and at the same time the scope of collaboration between UPTRON and Teletronix Limited was considerably widened. Since then the company has made steady progress and is now financially sound, having wiped off its losses and declared a dividend.

Teletronix Limited is located in 2.5 acres of land in the Bhimtal Industrial Estate of the U.P. State Industrial Development Corporation (UPSIDC). Bhimtal is a

small town in Naini Tal district situated on the shore of a lake of the same name. It is connected by a motor road with the rail-head Kathgodam about 20 kms. away. Naini Tal is at a distance of 22 kms. from Bhimtal. Bhimtal is now being developed as an industrial centre by the U.P. Government and a number of new industrial units, especially in the field of electronics, are coming up there. Teletronix faced no problem in the acquisition of land which forms part of an industrial estate. The factory shed was initially constructed in 1973. It has been substantially altered and expanded since 1979. Power also has posed no problems. It has a connected load of 100 KVA. Power supply is generally reliable though a stand-by generator is also maintained. Water supply is from the Jal Nigam sources in Bhimtal. However, as the industrial process does not use any water, no special problems are faced. Other infrastructural facilities like road are also adequate.

The history of Teletronix is thus a history of the successful rehabilitation of a sick industrial unit through the involvement of a dynamic state government enterprise. In 1978 when collaboration was sought with UPTRON the unit was virtually dying with hardly any production, accumulated losses of Rs.14 lakhs and no bank willing to give any advances. In the next two years a number of steps were taken in the areas of management and

finance which gradually bore fruit and helped turn the tide in favour of the company. The most important step was taken in 1979 when it was decided to streamline the management with the help of UPTRON. The present Managing Director and a few other key managerial personnel were brought on deputation from UPTRON. They formulated plans for the rehabilitation of the unit. One of the first steps taken was to improve the finances of the company. Towards this end the factory and other buildings were sold to the parent company KMVN, and then leased on rent. This improved the liquidity position immediately. Later on the buildings were acquired on hire-purchase.

Another important aspect of the agreement with UPTRON was a kind of subcontracting arrangement whereby Teletronix was to manufacture TV sets according to the specifications and standards of the former. This went a long way in solving the marketing problems of the company, which would be the responsibility of UPTRON. It only had to ensure proper quality of its products to ensure their acceptance by UPTRON.

Apart from these formal relations between Teletronix and UPTRON, considerable informal relations were also established which helped greatly in rehabilitating the company. These included acquisition of key personnel at the managerial and technical levels on deputation in the initial stages, transfer of technical know-how and



technical advice from time to time.

The result was the company has made steady progress since 1979. It is not only financially viable now, but is also confident of the future and has undertaken a major expansion programme by setting up another factory in Bhimtal. The progress can be seen from the fact that whereas by 1978-79 it had a very low turnover and had accumulated losses of Rs.14.00 lakhs on a paid-up capital of Rs.7 lakhs, its turnover has been steadily increasing since then. In 1979-80 it sold 160 TV sets and achieved a turnover of Rs.1.72 lakhs. The turnover went up to Rs.4 lakhs in 1980-81, Rs.4.83 crores in 1984-85 and Rs.5.98 crores in 1985-86. Since 1983-84 the company has been making profits and in 1984-85 it wiped-off all its previous losses. In 1985-86 it declared an interim dividend of 10 per cent for the first time.

The company has an authorised share capital of Rs.10 lakhs while the paid-up capital is Rs.7 lakhs. The total investment made so far is Rs.20 lakhs divided equally between building and plant and machinery. The main items of manufacture are black and white TV sets on contract from UPIRON and electronic parts for telephones on contract from the Indian Telephone Industries. Recently the manufacture of some black and white TVs



which the company is marketing under its own brand name on an experimental basis has also been taken up. The market response is reported to be good. This is a prelude to the large-scale manufacture and marketing of such TV sets in a new factory, Kumaun Televisions (Kumtel) set up by the KMVN which is fast nearing completion in the same premises as the existing factory.

The progress in sales achieved between 1979-80 and 1985-86 is summarised in the following table. The increase in sales, it will be seen, is truly impressive.

(Amount in Rs. lakhs)

Year	Teletronix		Kumtel
	Sales of TV	Total Sales	
1979-80	3.22	4.22	--
1980-81	11.09	12.26	--
1981-82	55.64	55.95	--
1982-83	97.56	104.90	--
1983-84	229.32	231.26	--
1984-85	437.46	478.24	7.48
1985-86	460.11	462.00	68.00

The main raw materials used in the manufacture of TV sets and telephone parts are pictures tubes, capacitors, resistors and other electronic and electrical components and wooden cabinets. All these materials, except wooden

cabinets to some extent, have to be procured from outside. This does not place the company at a disadvantage in relation to other TV manufacturers as far as cost of production is concerned, because the central transport subsidy, which is available to all industries in the hill areas, offsets the higher transport costs. Wooden cabinets for TV sets are also purchased from three small manufacturing units which have come up in Bhimtal.

Teletronix employs about 300 people directly in various categories, most of them at the level of workers. The workers belong either to Bhimtal town or the nearby villages. Their average wages come to about Rs.700 per month. In addition they are also paid 20 per cent incentive wages. No housing is provided to the workers who live in their villages or in Bhimtal town. Housing is arranged on lease only for technical and managerial personnel who are mostly from outside. The company, however, is encouraging its employees to construct their own houses by giving loans for this purpose. The workers are not unionized and the worker-management relations are stated to be cordial as is evidenced from the fact that there has not been any major strike or labour unrest in recent years. Women form half the work force.

One of the important contributions of Teletronix has been the provision of self-employment opportunities to a number of young people, especially women. This has been achieved through the organisation of training

programmes in electronics and giving work on contract to young people trained by it. Initially, the training programme was undertaken under the TRYSEM scheme of the government. With the involvement and cooperation of the district officials, the company utilised TRYSEM to provide training in electronics to young people in the area. The scheme was modified somewhat by increasing the duration of training from 3 months (which was considered too short a time) to six months and later on to one year. During the period of training the trainees received a stipend of Rs.100/- p.m. from TRYSEM funds. After six months the company provided an additional stipend of Rs.35/- p.m. Since the purpose of the scheme was to train the youth for self-employment, they could not be given regular jobs by the company. However, they were provided electronic assembly jobs on contract basis which they could do in their homes. About 100 people - mostly women - have taken advantage of this opportunity and are earning between Rs.700 and Rs.1100 per month. Some of them have even been provided workplaces within the factory. These people make circuits, assemblies and do other jobs according to the specifications given by the factory, which then buys the product from them after quality inspection at pre-determined rates. The raw materials and components are also provided by the factory. Thus the contract workers are able to earn as much as, if not more than, the regular workers without much of capital investment.



During the last one year the company has introduced a new training scheme. It is setting up a full-fledged training centre in electronics, called the Kumaun Electronics Training Centre, with funds provided by the state Government. The number of young people to be provided training will also be much higher than in the past. Such trainees are likely to find employment in Teletronix, its new subsidiary Kumaun Televisions, and the other electronics industries which are fast coming up in Bhimtal and the adjoining areas.

Apart from providing training and encouraging self-employment among the youth, the Teletronix factory has also created indirect employment for a number of people. This has been done through contract jobs within the factory for various operations like moving empty cabinets, semi-assembled TV sets, packaging and transporting etc. About 50 persons have been provided indirect employment in this way. Some economic activity has also been generated in Bhimtal by the presence of the Teletronix factory. The most important of these is the setting up of 3 small units manufacturing wooden TV cabinets. Teletronix is at present buying 25 to 30 per cent of its requirements from these units. The demand for cabinets is likely to rise when Kumaun Television goes into full production.



Being a small-scale unit, Teletronix does not have many schemes of workers welfare apart from what it is required to provide under the Factories Act viz. canteen facilities, etc. The workers are not provided any housing. They live in their own homes either in the nearby villages or in Bhimtal town. Housing has been provided only to the managerial and senior technical persone. In fact the company is now encouraging its officers to construct their own houses and is providing loans to them for this purpose.

Interestingly, the management of Teletronix did not consider alcoholism and absenteeism among the workers as a major problem. This, as pointed out earlier, was a major problem in the case of Almora Magnesites. Our hypothesis is that this difference may be explained by the relatively greater degree of urbanization, contact with the outside world and familiarity with some aspects of urban-industrial values among the people of Bhimtal and their near-total absence in Jhiroli. Alcoholism, we have noted, is a general problem of the hill areas, equally prevalent in the towns and the villages. Hence the blame cannot be laid only on industrialization and the importation of new cultural and behavioural influences and mores.

As far as infrastructural and other facilities are concerned, Teletronix faces fewer problems than Almora

Magnesite. It is linked by fairly good all-weather roads to the rail-head at Kathgodam, the district head-quarter Nainital and to other areas in Kumaun. Transport of raw materials to, and finished products from the factory does not pose too much of a problem, except during the rainy season when land-slips block the roads at times. Telephone and telegraph communications did pose a problem in the initial stages but they are reported to have improved lately. Bhimtal also has a Public Health Centre with 4 doctors, while fully equipped hospitals are available at Naini Tal. A few schools are also available at Bhimtal. The major problem at present seems to be housing which is in short supply. However, we feel that since Bhimtal is poised for industrial development in the near future, a higher level of urban facilities are also likely to develop in course of time.

C. U.P. Digital Limited, Bhowali

The third industrial unit which we selected for study is the U.P. Digital Limited situated at Ghorakhal, about 2 kms. from the town of Bhowali in Naini Tal District. Bhowali, itself is located 11 kms. from Naini Tal on the main Haldwani-Almora motor road. Bhowali is also connected to Naini Tal and other locations in Kumaun by all-weather motor roads.

U.P. Digital is a wholly owned subsidiary of the U.P. State Industrial Development Corporation (UPSIDC), and is an ancillary unit of Hindustan Machine Tools Ltd. (HMT). It consists of two units viz., the watch assembly unit set up in 1977 and a watch-case unit set up in April 1985. The watch assembly unit is engaged in assembly of watches from CKD components supplied by HMT. The watches are then sold to HMT which is responsible for their marketing. Since no parts for watches are being manufactured the company is engaged only in assembly operations and therefore the level of technology employed is also low. Basically the company is dependent on the skill of the workers. The watch-case unit, on the other hand is engaged in the production of watch-cases for supply to HMT. As such it uses precision instruments and shaping machines.

The decision to establish the watch assembly unit in the hill area was taken in 1976-77 with two major considerations in mind. Firstly, it was hoped that it would act as a catalyst for the industrial development of the economically backward hill areas and provide employment opportunities to the local people. Secondly, the hill areas offered a comparative advantage for industries of this kind because of the dust and pollution free atmosphere. It did not take too long to obtain the necessary licenses and start operations. The watch assembly



unit went into production in December 1977 i.e. within a year of the decision to establish it.

The factory is located on 16.5 acres of land belonging to the UPSIDC. At present only about 4 acres have been used for factory and other buildings, while the rest has been left free for future expansion. The land on which the factory is located originally formed part of the Ghorakhal Estate belonging to the erstwhile Nawab of Rampur. The Government of U.P. took over this estate in the sixties. When the idea of establishing the U.P. Digitals factory was mooted in 1976-77, the state Government transferred 16.5 acres to the UPSIDC for this purpose. The factory building from which the watch assembly unit is functioning also belongs to the UPSIDC for which the U.P. Digitals pay an annual rent of Rs.2000/-. The watch-case unit, however, is located in a separate factory shed owned by the company itself.

As mentioned earlier, the company is a wholly owned subsidiary of the UPSIDC which has invested a total of Rs.35.20 lakhs in it in the form of equity - Rs.25 lakhs in the watch-case unit and Rs.10.20 lakhs in the watch assembly unit. Further financing has been done through term loans from financial institutions. The watch-case unit has availed of Rs.31.19 as term loans - Rs.17.87 from the U.P. Financial Corporation (UPFC), Rs.4.00 lakhs from the Pradeshia Industrial Investment Corporation of



U.P. (PICUP) and Rs.9.32 lakhs from the UPSIDC. The watch assembly unit on the other hand has availed of loans totalling Rs.12.66 lakhs - Rs.5.83 lakhs from the UPFC and Rs.6.83 lakhs from in UPSIDC. Thus the total capital investment in these two units of U.P. Digitals comes to Rs.79.05 lakhs - Rs.56.19 lakhs in the watch assembly unit and Rs.22.86 lakhs in the watch-case unit. In addition the company has availed of capital subsidy on account of its location in the backward hilly areas. The total amount of subsidy has been Rs.10.40 lakhs.

When the company was set up in 1977, it was decided to undertake assembly of watches from both CKD and SKD components. However by 1980-81 it was decided to discontinue SKD assembly as it was not found to be as remunerative as the CKD assembly. The actual production of the CKD assembly since 1978-79 has been follows.

Year	No. of watches Assembled
1978-79	2500
1979-80	25440
1980-81	95400
1981-82	173204
1982-83	251152
1983-84	202203
1984-85	220211
1985-86	230970

The actual production may be compared with the target of 2.80 lakh watches per year which has been set in recent years. It will be seen that the actual production has been about 70 to 90 per cent of this target during the past 4 years. In 1985-86 the production was about 82 per cent of the target. The main reasons given by the factory management for the non-realisation of target in full are : (i) irregularity in supply of components by HMT and (ii) high degree of absenteeism among the workers, especially the women workers.

The first problem has been solved to a large extent in recent years with the commissioning of a new HMT factory in Ranibagh, Naini Tal district. Earlier the components were being supplied by HMT from its factory at Tumkur in Karnataka. Because of the long distance involved, components often did not reach in time. Since October 1985, the Ranibagh unit of HMT, which is just 30 kms. away from the U.P. Digital's factory, has been supplying the components as a result of which bottlenecks faced in supply have been removed.

The problem of absenteeism among women workers, however, continues. The problem becomes particularly acute when we keep in mind that over half the total number of employees in the watch assembly and watch-case units are

female. Most of the women work as operators in the assembly operations. In fact women constitute about three-fourths of the work-force in the assembly unit and about 6 per cent in the watch-case unit. There does not seem to be any adequate explanation for the high degree of absenteeism among women-workers in the U.P. Digitals factory. This phenomenon cannot be ascribed to any socio-cultural factors because in the Teletronix factory located only 11 kms. away, where again a large number of women are employed, such a problem does not exist. One possible reason for the differences observed between U.P. Digitals and Teletronix in respect of absenteeism among women workers could be the relative laxity in management and administration at the former as compared to the latter. While Teletronix is run by the Managing Director located at Bhimtal, the U.P. Digitals is headed by a Project Manager based at Ghorakhal - the Managing Director and other higher managerial personnel being at Kanpur, with much of the decision making powers also being located there. This not only implies a longer chain of command at U.P. Digitals but also an inability to take crucial decisions on time. The management of Teletronix informed us that absenteeism does not pose too big a problem for them because they have a system of regular contacts and counselling for the workers. In the case of U.P. Digitals there is no such system in operation.

An interesting, though none too happy, result of the problem of absenteeism among women workers at the U.P. Digital's factory appears to be a sharp reduction in the hiring of women workers in recent years. Thus we find that in the watch assembly unit established in 1976-77, 83 out of 110 employees (i.e., about 74 per cent) are women, while in the watch-case unit established in 1985 only 3 out of 51 employees (i.e. about 6 per cent) are women. Partly this could be due to the nature of work being different in the two units (watch assemblies generally tending to prefer women operators) but a reluctance to employ more <sup>women</sup> given past experience may also be an important factor in this case.

The power requirement of the unit is about 2500 units per month. The production in the company has reportedly suffered heavily due to frequent power interruptions, trippings and low voltage. Consequently in 1980-81 a diesel generating set was installed and this problem was overcome to a large extent in the assembly unit. The problem, however, persists in the watch-case unit. Water requirement of the unit is mainly restricted to drinking purposes. The company has a water storage tank of its own within the premises and the water is supplied by the Uttar Pradesh Jal Nigam.



U.P. Digitals Ltd. provides regular employment to 165 people of which 155 are from the nearby villages or belong to Naini Tal district. Of the total employment of 165 people, 123 people are skilled, 36 ministerial employees and 6 people in the managerial and supervisory categories. Almost all the employees belonging to first two categories - skilled and ministerial - are local people or people from Naini Tal district. Thus the basic objective of providing employment opportunities to the local people has been realised.

The assembly unit of the company is headed by the project manager. The unit has 83 female operators in a total staff of 109 and all belong to Naini Tal district. The average wage of these people come to about Rs.837/- per month. The watch-case unit employs 51 people. The wages in this unit vary from Rs.471 per month (junior technician) to Rs.2700 per month given to the Assistant Production Manager. The company has no housing colony of its own and most of the non-local employees live in and around Bhowali town. As far as the various kinds of facilities for the employees are concerned, the company provides Rs.500/- per year as medical expenses, free tea in the unit twice a day in addition to other facilities like provisions of indoor/outdoor games and the establishment of a circulating library.

The worker-management relations are cordial. There does exist a union with a membership of 75 female operators but it has no affiliation with any political party. Only once in August 1985 the union called for a strike for 3 days and succeeded in getting higher D.A. The company also initiates training programme for the operators drawn from Bhowali and adjoining areas with the assistance received from the State Government. Each trainee is given Rs.17.50 per day and after completion of the training, usually lasting for 6 months, most of the trainees have been given employment in the unit itself.

The unit is served by all-weather roads. Transportation as such is not much of a problem of the unit as the transportation cost is borne by the HMT. Similarly HMT directly purchases the final goods manufactured by the unit also. Other infrastructure facilities like banks and medical facilities etc. are available in and around Bhowali whereas telephone and telegraph facilities are available in the factory itself. The communication facilities (telephone and telegraph) are, however, highly unreliable and do not function at times due to one or the other technical problem.

D. Saraswati Woollen Mills, Ranikhet

The Saraswati Woollen Mills, the fourth industrial unit included in our study presents a totally different picture of the industrial scene in the hill areas. It would not be too wrong to say that it has been a sick unit from its very inception, mainly due to poor management.

The unit is located about 10 kms. from Ranikhet in Almora district on the Ranikhet-Ramnagar motor road. The distance from Kathgodam - the nearest rail head - is about 100 kms. It was established in 1981 by a private entrepreneur on his own land which formed part of a large estate, which presumably had come under the purview of the land ceiling law. Organisationally it is a private limited company in which all the directors belong to the same family. Though the company was registered in 1973 and it got an industrial licence two years later, it took about 9 years for it to build the factory shed, instal the machinery and go into production. The main reasons cited by management for the delay in the implementation of the project are : (i) non-availability of finances in proper time and (ii) delay in acquisition of land. As for the first, it was pointed out by the management that the U.P. Financial Corporation sanctioned a loan in 1976 for the project but did not release the

amount timely. When it did, it gave the money in small instalments which delayed the work of construction and installation of machinery. Similarly PICUP, the other term-lending institution for which the company raised a loan, sanctioned its loan in 1975 but released the money only in 1979. In regard to the delay in the acquisition of land, the position explained to us was that the factory is located in 5 acres of land out of which 2 acres belonged to the main shareholder of the company. This was sold to the company along with a house standing on the land for Rs.30,000. The remaining three acres were acquired by the government. This process, it was claimed, took about two years. It appears to us that the entire land formed part of the estate belonging to the promoter of the company, part of which came under the ceiling legislation. They requested that 5 acres from this land may be acquired for the Saraswati Woollen Mills. The U.P. Government finally gave only 3 acres.

When the construction of the factory began there was no approach road, power line or water connection at the site. The power line was provided after one year of commencement of construction while the approach road took two years. Both these were provided by the U.P. Government. The factory now has a connected power load of 200 KVA. Arrangements for water have been made by



the company by tapping the flow of nearby springs and collecting the water in storage tanks. Water is needed for dyeing and washing of wool and for drinking purposes. Though the management complained of frequent power breakdowns and rostering of power, it has apparently not had any adverse impact on production which in any case has been very low. They have not installed any stand-by generator, for which a subsidy is available from the state government.

The total investment on the project when it was completed in 1981 came to Rs.56 lakhs against the original (1973) estimate of Rs.32 lakhs. Obviously the delay in the completion of the project resulted in cost escalation. The investment has been financed as follows :

Equity	-	Rs.9.59 lakhs
Term Loans		
UPFC	-	Rs.30.00 "
PICUP	-	Rs. 5.85 "
IDBI	-	Rs. 2.50 "
Central Subsidy	-	Rs. 8.06 " (Only Rs.6.00 received so far)

The company is engaged in the production of shoddy woolen yarn. The raw material consists of used woollens imported mainly from Australia and Europe. The shoddy woollens are shredded, washed, dyed and spun into woolen yarn, which is sold to weaving mills in Amritsar and Panipat. Apart

from shredding, sizing and cording machines, the factory has 600 spindles. It has an installed capacity of producing 1200 kg of woollen yarn per day working three shifts. At the time of our visit it was producing only 200 kg per day in a single shift. Actual production in 1983 and 1984 - the years for which data were made available - was only 53,075 kg and 45,408 kg respectively. In 1985 the factory was closed for the major part of the year and hence there was hardly any production. The production in 1983 and 1984, thus has hardly been more than 12.5 per cent of the capacity. It is hardly surprising that the company has been making losses (though the extent of the losses was not revealed to us) and has turned sick. It now does not have any working capital as the banks have refused to advance any money.

Given the low volume of production, the employment generated by the unit is also very low. According to the information supplied by the management a total of 29 persons were employed - 4 at the supervisory level earning about Rs.600 per month, 10 skilled workers earning about Rs.500 per month and 15 unskilled workers (including 2 women) earning a daily wage of Rs.15 per day. Except for 5 skilled workers, all were reported to be local. However, at the time of our visit to the factory we could find only 9 people working there. Enquiries with the local people also confirmed that only 10 people were

employed in the factory and the rate of daily wage was only Rs.10 per day. A few workers (mainly the outsiders) were given accommodation ~~within the~~ factory while the locals lived in nearby villages. The company did not provide any other benefit to the workers.

Looking at the general condition of Saraswati Woollen Mills we got the distinct impression that all its ills were mainly the result of poor management. In fact it appeared that the management was not really interested in running it as a viable unit and was looking for some way in which the unit could be declared a sick one and help was available from the government, term-lending institutions and the banks to bail them out. The local people also felt that the main promoter of the company was not really interested in it as he lived in Delhi where he had some other business and seldom visited the factory.

We are mentioning these facts because the experience with enterprises like the Saraswati Woollen Mills has made the local people suspicious of any private entrepreneur trying to establish an industrial unit in their area. The situation in Ranikhet is particularly bad because another industrial unit, Kumar Bronze Ltd. which was opened with much promise a few years back is lying closed for the past 3 years or so. These unhappy examples seem to have created an impression in the minds of the

people that private entrepreneurs establish industrial units in the hills only to take advantage of subsidies and special incentives available there, and once their purpose is served they pack up and go, leaving the hill people high and dry. This inevitably leads to a suspicion of outsiders and even local fly-by-night entrepreneurs.

#### E. Venus Cements Limited

The fifth industrial unit selected by us for study - Venus Cement Limited - is located in the Garhwal Division. It is a relatively new unit as it commenced production only in August 1985. It is engaged in the manufacture of ordinary portland cement from locally available limestone. The factory is located at Rani Pokhri on the outskirts of Rishikesh town at the western extremity of the Doon Valley. It is connected to both Dehra Dun (35 kms. away) and Rishikesh (7 kms. distant) by an all-weather metalled motor road.

Venus Cements is a private sector unit promoted by an entrepreneur belonging to Meerut. The main reason for locating the unit at Rani Pokhri was the easy availability of limestone - the main raw material - and the desire to take advantage of backward area incentives.

The factory has been established at a total investment of Rs.2.57 crores. The project was initiated at the



beginning of 1984 and completed in August 1985 when trial production started. Commercial production began in November 1985. It has a technical collaboration with the Cement Research Institute for the Vertical Shaft Kiln process of cement manufacture. The installed capacity of the plant is 100 tonnes of cement per day. The production in the middle of 1986 was, however, only 30-40 tonnes per day. The main reasons for the shortfall in production given by the management were : (i) relative newness of the technology and machinery being employed especially in relation to the skills available with the plant; (ii) power shortage and mechanical breakdowns; and (iii) shortage of manpower, especially skilled manpower. Thus the unit is still in its gestation period and is experiencing the inevitable teething problems. It is therefore difficult to assess its financial performance or profitability at this stage.

The capital structure of the company comprises equity capital of Rs.62 lakhs and term loans totalling Rs.1.24 crores from different financial institutions. Of this latter amount Rs.50 lakhs has been provided by PICUP, Rs.30 lakhs by UPFC, Rs.30 lakhs by the Allahabad Bank and Rs.14 lakhs by the Punjab National Bank. The company has also availed a central capital subsidy of Rs.25 lakhs.

The factory has been built on an 8 acre plot of land which was purchased privately from the previous owner.

Hence the acquisition of land did not present any problems. Presently only 60 per cent of the land has been utilised for the factory. The remainder has been left free for future expansion.

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The factory has a connected power load of 1000 KVA supplied by the UPSEB. Though there is no load-shedding or rostering of power in this area, yet it has had to contend with frequent power breakdowns which have, on occasions, affected production. To overcome this problem it has installed two generators. Water supply has been provided by the U.P. Jal Nigam. The company has installed a water storage tank of its own, since the industrial process in the plant requires water. On occasions it has faced a shortage of water and has had to transport it from nearby places in water tankers.

Being located in the Doon Valley, in the vicinity of Rishikesh, the other infrastructure facilities are quite adequate. It is serviced by the Dehra Dun-Rishikesh motor road which is an all-weather road. The nearest rail-head is Rishikesh, which is only 7 kms distant. Postal, telegraph and telephone facilities are also good, while medical facilities are available in Rishikesh.

The main raw material used by the plant is limestone which is available in plenty in the hills around Dehra Dun. It is transported in trucks from the quarries.

The other inputs used are Gypsum which is procured from Rajasthan and coking coal procured from Dhanbad-Jharia. The main market for manufactured cement is western U.P. and parts of Haryana and Punjab. The company has not yet faced any problem in marketing its cement. It mainly operates through selling agents appointed in different places. However, since the production of the plant is still quite low, the problem of marketing and stock inventories is also not likely to be acute.

Venus Cement Ltd. has provided employment to a total of 107 persons. Of these 3 are at the managerial level and 13 at the supervisory level. The former earn between Rs.3000 and Rs.5000 per month, and the latter between Rs.1000 and Rs.2500 per month. All of them are from outside the region. Apart from these the plant employees 35 technicians, who earn between Rs.500 and Rs.1000 per month and 56 workers who get an average wage of Rs.467 per month. Among the technicians 15 are either local or from within the hill region while all the workers are local. Thus 78 per cent of the workforce below the supervisory level consists of local people or people from the hill region.

Apart from wages some of the employees (including workers) have been provided housing in the factory premises while others have been given housing assistance.

Medical reimbursement facilities are provided to all employees. Since the unit is quite new, it has not yet faced any labour problems. The workers are not unionised and worker-management relations are reported to be cordial.

In conclusion we may point out that Venus Cements Ltd., though located nominally in the hill region, is in fact like any other industrial unit located in the plains. However, it is able to enjoy all the advantages of its location viz., capital subsidy, transport subsidy, etc. without facing any of the disadvantages like poor infrastructure, uncertain transport and communication facilities etc. which industrial units in the hills typically face. This would be equally true of all industrial units located in the Doon Valley or the terai region.

#### F. A.P.R. Wools Limited

APR Wools Private Limited is also a very new industrial unit. It went into production in January 1986. The project was conceived in September 1984 and the construction started in March 1985 soon after the licence was obtained. Thus the project had a short gestation period. The total capital investment in the project is Rs.75.60 lakhs which has been financed as follows :



Equity capital	Rs.10.90 lakhs
Term Loans:	
UPFC	Rs.30.00 lakhs
PICUP	Rs.20.40 lakhs
Central Capital Subsidy	Rs.14.30 lakhs

The unit is located in Muni-ki-Reti in Tehri Garhwal district at the foot of the Himalayas on the right bank of the Ganga. Muni-ki-Reti is only 2 kms. from Rishikesh. APR Wools is a private sector enterprise promoted by a local entrepreneur. The main reasons for its location at the present site were (i) availability of incentives to new industrial units in the hill areas, (ii) proximity of the site to a major town like Rishikesh where all facilities are available, (iii) existence of a market in the hill areas and at Rishikesh for its products, and (iv) desire of the entrepreneur to invest his money in or near his native place.

APR Wools is engaged in the manufacture of acrylic and woollen yarn. It has a licenced capacity of 2400 spindles, though only 1200 spindles have actually been installed. In addition to spindles it also has facility for dyeing the yarn. The technology which it uses is the same as other units located at Ludhiana and other places. The main raw materials used by the unit are acrylic fibre and tops, woollen tops and dyes and chemicals.

These are procured from Ludhiana and Delhi. The main markets for the yarn it produces are the hill districts of Garhwal and the towns of Rishikesh and Dehra Dun.

The unit has a production capacity of 275 metric tonnes of yarn per annum at 60 per cent capacity utilization. During the first two months of its operation, <sup>till</sup> i.e. March 31, 1986, however, it was able to produce only 7510 kg. of yarn which represents only 16 per cent of what it should have been producing. However, since April 1986 the production has picked up to match installed capacity. It has not yet faced any problem in selling its product. The time during which the unit has been in operation is so short that not much can be said about its financial or other performance. Yet it does appear to have got over the initial teething problems and seems to be doing fairly well.

APR Wools Ltd. has been built on 6 bighas (about 1.2 acres) of land purchased privately at a total cost of Rs.3.80 lakhs. It has a sanctioned and connected power load of 220 KVA from the UPSEB. Though there is no load-shedding or rostering of power, the management did complain of frequent power breakdowns. Consequently it has installed a stand-by generator. Its water requirements are 50,000 litres per day - mainly for dyeing and washing. This is met by a private tubewell and overhead storage tank.

The other infrastructure facilities like road, telephone, telegraph etc. are also satisfactory and no major problems are presented by them.

The unit has provided employment to 66 persons - 4 at the managerial/technical levels ( 1 spinning master, 1 dyeing master, 1 turner and 1 boiler attendant) 2 at the supervisory level, and 60 workers of which 40 are skilled and 20 unskilled. The average level of wages are as follows :

Spinning and Dyeing Master	-	Rs.2500 p.m.
Turner and Boiler attendant	-	Rs.1000 p.m
Supervisors and skilled workers-		Rs. 600 p.m
Unskilled workers	-	Rs. 500 p.m

Two-thirds of the work force (including the technical and supervisory personnel) is either local or from within the hill region. Thus in terms of employment it has largely benefited the people of the hill areas. In fact the only categories of employees who are from outside the area are the Spinning and Dyeing Masters and 20 out of 40 skilled workers. Apart from wages the workers have also been given housing and medical facilities as per the Factories Act. The workers are not unionised and the worker-management relations were stated to be cordial.

One of the important impact which the unit has had on the economy of the nearby areas is that it has led to

the establishment of a number of household-level hosiery and knitting units catering to the large demand for woollens in the hill areas.

Finally we would like to mention some of the problems identified by the entrepreneur. We feel that these are not specific to this particular unit but would have their impact on all industries in the region. Firstly, the entrepreneur claimed a shortage of working capital. In this context he pointed that the financial institutions provide term loans on the assumption that working capital, as assessed, would be available from the commercial banks, but the banks are not forthcoming in this respect or they delay their instalments of working capital. This has an adverse impact on the viability of the industry. Secondly, he complained of difficulty in procuring raw materials. Raw material is procured from people who have import quotas and many a times serious problems are faced in acquiring it. Hence it was suggested that actual users should be given import quotas on the basis of their needs. Lastly, it was pointed out by the entrepreneur that the power tariff in the state is higher than in other states. This affects the competitiveness of industry vis-a-vis units in other states. Probably a case can be made for a power subsidy as well in the hill areas.



### Conclusions and Recommendations

In the previous sections we have discussed in some detail the experience and working of six industrial units in the hill areas of Uttar Pradesh. We now present some general conclusions based on the study.

At the outset we would like to mention that even while the economy of the hill areas continues to be predominantly agrarian in character, yet some industrialisation has been taking place in recent years. There appear to be two major reasons for the establishment of industries in the hills ; (i) availability of important resources, especially mineral resources and (ii) availability of special incentives like central capital subsidy and transport subsidy.

The first point deserves some discussion as it has important implications for industrialisation and environmental preservation in the hills. The two most important resources which the hill areas have are forests and minerals. Both these can form the basis of industrialisation. Unfortunately, exploitation of these resources can also lead to environmental destabilization. Because of increasing concern for the environmental health of the Himalayas in recent years, there is considerable opposition to mining and to commercial exploitation of

forests. This therefore poses a serious dilemma before anyone trying to advocate industrialization based on local resources in the hill areas. On the one hand the economic advantages and the benefits to the local population in terms of jobs are quite obvious and attractive. On the other, these have to be weighed against the possible harm that can be caused to the environment. In addition one has to contend with the social problems created by displacement of the population attendant on large-scale mining operations, or of depriving the rural people of their traditional rights in forests if they are used for commercial purposes. We have seen some of the problems faced by Almora Magnesites in regard to acquisition of land, rehabilitation of displaced people and rehabilitation of degraded areas.

What this calls for, therefore, is a clear-cut policy in regard to mining and other local-resource-based industries in the Himalayan region. The policy should clearly identify the areas where mining can be undertaken and what measures should be taken for the rehabilitation of the displaced people and for the rehabilitation of the environment. The experience of units like Almora Magnesites can be particularly instructive in formulating such policy guidelines. The desirability of establishing forest-based industries should also receive careful consideration,

especially when we bear in mind that the rate of depletion of forests has already reached alarming proportions in the hills.

As for the second factor viz., availability of special incentives, we feel that it has acted as a positive factor in the establishment of industries in the hill areas, but mainly in the terai belt of Naini Tal district and in the Doon Valley - areas which are only nominally part of the hill region as they enjoy almost all the locational advantages of other plain areas of the state. It is thus hardly surprising that most of the new industries in the hills are tending to get concentrated in the foothills. This is particularly true of privately-owned industries. Public sector units do feel obliged to go higher up in the hills, even though they have to face more problems, because they have to serve government policy more directly than private sector units.

In spite of this some new industries have come up in the higher hills, especially in the Kumaun region. Though many of them are public sector or joint sector units, a few private sector units have also been established. What is particularly heartening to note is that many more are planned and some have already started the work of construction after obtaining the necessary licences. This is especially true of the region around Bhimtal in Naini Tal district which is being developed as an industrial centre in the hills.

The experience of the existing industrial units in the hills is somewhat mixed. The public sector units studied by us happen to be in the area of electronics. While one has done particularly well in the face of heavy odds and has succeeded in turning a sick unit into a profit-making one, primarily due to the involvement of UPTRON and the efficient management and marketing support provided by it, the other appears to be limping along in spite of being an ancillary of the HMT. The problem in the case of the latter appears to be managerial. As for the private sector unit in the hills, the situation seems to be quite bad. It has become a sick unit mainly due to poor management and the shortage of working capital. If the local people are to be believed, even the intentions of the entrepreneur are in doubt - the entrepreneur set up the industry only to take advantage of subsidies and incentives and was not interested in running it. Be that as it may, the fact remains that the history of the closure of many new industries in some parts of the hills has given substance to the general feeling among the people that industrialisation holds no promise for them or for the area. They view it as a means of making quick money by the entrepreneurs at the cost of the government in the name of backward area development. Another problem common to most of the industrial units studied by us, especially those in the private sector, is the shortage of working capital.



To overcome these problems we feel that some of the following measures could be considered.

1. Instead of treating all locations, whether the terai, foothills or the higher hills, as similar in granting incentives and concessions, some attempts should be made to give more benefits to industries in the higher hills. This could be done by raising the level of subsidies to industries located above a certain height - say 1000 metres above mean sea level.
2. Given the nature of the terrain and the pattern of human settlements, infrastructure like roads and communication will continue to be a problem for some time to come. Hence it may not be too economical to have industries dispersed over the entire region. Efforts should therefore be made to have agglomeration of industries in selected locations in the hills where all facilities can be developed upto a certain minimum level. To start with such sites may be close to the plains. Later on one could move further up into the higher areas. So far acquisition of land for establishment of industry has not proved much of a problem, except in some special cases. However, in future problems may arise when transfer of land to industry comes into conflict with environmental concerns which have already started acquiring importance. Therefore, it would be desirable to plan industrial locations keeping the availability of land as well as the environmental dimension in mind.

3. Transport subsidy has been widely welcomed by all industrial units and it should be continued. However there are certain problems in its implementation and application which need to be removed. One of the common complaints voiced was that there are long delays in its payment because of procedural factors. These should be cut and the procedure streamlined so that speedy and timely reimbursement is ensured. We were informed that on occasions it takes upto 4 years to get claims settled, especially when it is above a certain amount in which case the matter is decided by the Director of Industries at Kanpur. We feel that decisions regarding payment of transport subsidy should be wholly within the competence of the local office of the Directorate of Industries. Transport subsidy at present is not available for transport within the hills. In other words if an industry procures some material from the hill areas it cannot claim transport subsidy. This appears anomalous for two reasons. Firstly, it discourages the use of inputs from the hills in industries established there, and secondly it overlooks the fact that transport charges are higher in the hills than in the plains for comparable loads and distances. Hence we feel that transport subsidy should also cover transport within the hill region. Finally, we learnt that transport subsidy is not available for input materials like fuel. This too appears anomalous.

4. Some way should be found to provide working capital in timely doses at concessional rates to the industries, especially the small and medium industries, in the hill areas. Coordination with the banks in this respect would be necessary. This is a problem which afflicts many industries, especially those in the private sector, and in fact appears to be an important reason (apart from poor management) for the industries going sick.

5. Another problem common to most of the industrial units studied by us is the shortage of skilled manpower. This problem is likely to become more acute as more industries are established in the hills in future. Hence efforts should be made right now to assess the needs of skilled ~~man-power~~ likely to arise in the short and medium term and ways and means devised to impart training to the local youth. Existing technical training institutions should be equipped for this purpose and if need be, new institutions may also be established. Trained local manpower would mean that more of the local people would be able to get better paying jobs in industries in the future. This would help in creating local support for industrial development, which in many cases is lacking at present. The hill areas have one advantage over the rest of the state, which can be made use of to the advantage of the local people. The level of literacy among both men and women is higher in the hill region than in the rest of the state - the literacy rate is 36 per cent in the hill region as compared to 27 per cent in the state.

